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S/N 09/326,405

PATENTP. 01  
# 23  
5/13/03IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Dave B. Lundahl

Examiner: Tran A, Phi Dieu N

Serial No.: 09/326,405

Group Art Unit: 3637

Filed: 06/04/1999

Docket: INOV.01US01

Title: IMPROVED WINDOW SCREEN SYSTEM

Assistant Commissioner for Patents

Washington, D.C. 20231

SUPPLEMENT TO AMENDMENT C

Dear Sir:

In the referenced application, Applicant mistakenly omitted the Declaration under 37 CFR 1.132 of Calvin E. Hogan when transmitting Amendment C on February 19, 2003.

Please enter the attached Declaration, dated February 10, 2003 into the referenced application.

## CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

## MAILING

☐ deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the: Commissioner for Patents, Washington, DC 20231.

Signature

Russell S. Kraiec

(type or print name of person certifying)

Date May 12, 2003

## FACSIMILE

☒ transmitted by facsimile to the United States Patent and Trademark Office

(703) 872-4326

42 pages

and 703 746 3830

Dated this 12<sup>th</sup> day of May 2003.

Respectfully submitted,

By: 

Russell S. Krajec

Reg. No. 48,936

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**Declaration under 37 CFR 1.132**

I, Calvin E. Hogan, declare as follows:

1. That I am currently a factory sales representative for Custom Window Company of Denver, Colorado, a manufacturer of extruded windows and screens, and have been such since 1989, prior to that, I have been a manufacturer's representative for various extrusions and window components, including hardware, screen frame, and screen mesh, and I have been employed in various window and screen frame related positions since 1969;
2. That my relationship with Dave B. Lundahl consists of having sold various extruded window and screen components to Mr. Lundahl as late as 1980;
3. That I have reviewed the amended claims and specification of application serial number 09/326,405 of Dave B. Lundahl entitled "Improved Window Screen System" that are attached hereto as Exhibits A and B (Lundahl application);
4. That I have reviewed United States Patent 4,044,813 of Oren L. Emmons entitled "Attachment Means for Screen or Storm Window" which is attached hereto as Exhibit C (Emmons patent);
5. That I have reviewed United States Patent 4,867,222 of Jose Roman entitled "Hang Ups" which is attached hereto as Exhibit D (Roman patent);
6. That I have reviewed United States Patent 6,079,475 of Robert H. Morgan entitled "Security Screen" which is attached hereto as Exhibit E (Morgan patent);
7. That the Lundahl application discloses a rotatably operable window system with a flexible screen removably attached with a hook and loop fastener that is located between the movable portion (sash) of the window and the fixed portion wherein the sash is pivotally attached to the fixed frame;
8. That the claims of Lundahl recite "a moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position";
9. That the claims of Lundahl recite "said removable screen mounted between said fixed frame and said moving sash";

10. That one of the benefits of the screen of Lundahl is that the moving sash may be operated when the screen is in place and fully seated against the fixed frame;
11. That Emmons, in column 1, lines 35-36 teaches a screen system comprising "a light metal frame and conventional window glass or screen";
12. That Emmons, in column 2, lines 35-36 teaches a "window screen frame 26 having a screen 28";
13. That Emmons, in column 1, lines 40-49, teaches of a screen frame that is mounted to a casing through a fastener;
14. That Emmons teaches a screen must be held in place to the frame, and the frame is then mounted to a window casing by fasteners;
15. That Emmons does not show a "removable screen mounted between a fixed frame and a moving sash" as claimed by Lundahl;
16. That the screen of Emmons is fully supported by a frame and that at no time is the screen of Emmons in contact with any fastener;
17. That Emmons illustrates a double hung window system in Figures 1 and 2;
18. That a double hung window system requires a sash to slide in order to open and close the window;
19. That a double hung window does not have a "moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position" as stated in the Lundahl claims;
20. That a double hung window operates on different principles than does a window with a "moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position" as stated in the Lundahl claims;

21. That the reference of Emmons and other references to screens of double hung windows are not analogous to screens for casement windows and other windows with a "moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position" as stated in the Lundahl claims;

22. That Roman, in column 2, lines 6-9 teaches "a window cover 10 that is readily attachable to and removable from a window frame 12 with window sashes 14 and 16";

23. That Roman teaches mounting the screen on the casing of the window, which is not "between a fixed frame and a moving sash" as stated in the Lundahl claims;

24. That Roman does not show a "removable screen mounted between a fixed frame and a moving sash" as stated in the Lundahl claims;

25. That Roman stated in column 2, lines 32-37: "when the screen panel 22 is in a fold up position, as shown in phantom in FIG. 5, the bent over loop fabric strip 34 will interlock with the hook fabric fastener tabs 30 when pressure is applied thereto allowing a person (not shown) to obtain access to the window sashes 14 and 16";

26. That Roman recognized a problem in the art in that the moving sashes were not operable when the screen of Roman was in place;

27. That Roman solved the problem of access to the movable sashes by folding the screen out of the way;

28. That Roman illustrates a double hung window system in Figure 3;

29. That Roman does not have a "moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position" as stated in the Lundahl claims;

30. That the reference of Roman and other the references to screens of double hung windows are not analogous to screens for casement windows and other windows with a "moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position" as stated in the Lundahl claims;

31. That Morgan teaches of a security screen wherein a screen is mounted on a rotatable frame or moving sash;

32. That Morgan has a screen that is mounted in a moving sash and not "between the fixed frame and the moving sash" as stated in the Lundahl claims;

33. That the moving sash and screen of Morgan are operable to swing from an open position to a closed position;

34. That neither Emmons, Roman, or Morgan taken individually or in combination show a screen that is "mounted between the fixed frame and the moving sash" as stated in the Lundahl claims;

35. That no combination of Emmons, Roman, or Morgan yield a benefit of the present invention: that the moving sash may be operated while the screen is fully engaged to the fixed frame;

36. That Morgan shows moving sash, but the screen does not screen the window opening when the sash is in the open position, in contrast to the screen of Lundahl;

37. That the claimed invention of Lundahl is capable of opening and closing while keeping the screen fully attached to the fixed frame;

38. That even if the window screen of Emmons, the hook and loop fasteners of Roman, and the rotatable sash of Morgan could be combined, it would not yield the window screen of Lundahl, as the screen would not be "mounted between the fixed frame and the moving sash" as stated in the Lundahl claims;

39. That the mounting methods of Emmons, Roman, and Morgan are all different and there is no teaching to modify any combination of the methods;

40. That there is no suggestion or motivation to combine the screens of Emmons, Roman, and/or Morgan in any combination;

41. That I further declare that all statements made herein are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful

false statements may jeopardize the validity of the application or any patent issuing therefrom.

Executed this 10 day of February 2003.

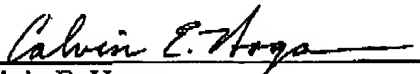
  
Calvin E. Hogan

EXHIBIT A

Attorney Docket No.: INOV01US01

**CLAIMS**

What is claimed is:

11. (New) An operable window system with a removable screen comprising:

a fixed frame;

a moving sash connected to said fixed frame and operable to substantially swing about an axis with respect to said fixed frame from an open position to a closed position; and

a removable screen removably connected to said fixed frame with hook and loop fasteners, said removable screen mounted between said fixed frame and said moving sash such that said moving sash is in contact with said removable screen when said moving sash is in said closed position such that said hook and loop fastener is engaged.

12. (New) The operable window system of claim 11 wherein said axis is substantially vertical.

13. (New) The operable window system of claim 11 wherein said axis is substantially horizontal.

14. (New) The operable window system of claim 11 wherein said window system is non-rectangular.

15. (New) The operable window system of claim 11 wherein the portion of said moving sash in contact with said removable screen is said frame portion of said moving sash.

16. (New) An operable window system with a removable screen comprising:

a fixed frame means for holding a window;

a moving sash means, connected to said fixed frame means, and operable to substantially swing about an axis with respect to said fixed frame means from an open position to a closed position; and

a removable screen means, removably connected to said fixed frame means with hook and loop fastening means, said removable screen means mounted between said fixed frame and said moving sash means such that said moving sash is in contact with said removable screen when said moving sash



is in said closed position such that said hook and loop fastener means is  
engaged.

17. (New) The operable window system of claim 11 wherein said axis is substantially vertical.

18. (New) The operable window system of claim 11 wherein said axis is substantially horizontal.

19. (New) The operable window system of claim 11 wherein said window system is non-rectangular.

20. (New) The operable window system of claim 11 wherein the portion of said moving sash in contact with said removable screen is said frame portion of said moving sash.

21. (New) A method of manufacturing an operable window system comprising:

providing a fixed frame;

attaching a moving sash to said fixed frame in such a manner that said moving sash substantially rotates about an axis with respect to said fixed frame from an open position to a closed position; and

attaching a removable screen to said fixed frame using a hook and loop fastener, such that said removable screen is mounted between said fixed frame and said moving sash such that said moving sash is in contact with said removable screen when said moving sash is in said closed position.

22. (New) The operable window system of claim 11 wherein said axis is substantially vertical.

23. (New) The operable window system of claim 11 wherein said axis is substantially horizontal.

24. (New) The operable window system of claim 11 wherein said window system is non-rectangular.

25. (New) The operable window system of claim 11 wherein the portion of said moving sash in contact with said removable screen is said frame portion of said moving sash.

26. (New) An operable window system manufactured by the process comprising:

providing a fixed frame;

- 60           attaching a moving sash to said fixed frame in such a manner that said  
moving sash substantially rotates about an axis with respect to said fixed  
frame from an open position to a closed position; and
- attaching a removable screen to said fixed frame using a hook and loop  
fastener, such that said removable screen is mounted between said fixed frame  
65           and said moving sash such that said moving sash is in contact with said  
removable screen when said moving sash is in said closed position.
27. (New) The operable window system of claim 11 wherein said axis is  
substantially vertical.
28. (New) The operable window system of claim 11 wherein said axis is  
70           substantially horizontal.
29. (New) The operable window system of claim 11 wherein said window system  
is non-rectangular.
30. (New) The operable window system of claim 11 wherein the portion of said  
moving sash in contact with said removable screen is said frame portion of said  
75           moving sash.
31. (New) An operable window system with a removable screen comprising:  
          a fixed frame;  
          a moving sash connected to said fixed frame and operable to substantially  
swing about an axis with respect to said fixed frame from an open position to  
80           a closed position; and  
          a removable screen removably and directly connected to said fixed frame  
with hook and loop fasteners, said removable screen mounted between said  
fixed frame and said moving sash such that said removable screen covers a  
window opening defined by said fixed frame when said moving sash is in said  
85           open position.
32. (New) A method of manufacturing an operable window system comprising:  
          providing a fixed frame;  
          attaching a moving sash to said fixed frame in such a manner that said  
moving sash substantially rotates about an axis with respect to said fixed  
90           frame from an open position to a closed position; and

Attorney Docket No.: INOV01US01

attaching a removable screen directly to said fixed frame using a hook and loop fastener, such that said removable screen is mounted between said fixed frame and said moving sash such that said screen covers a window opening defined by said fixed frame when said moving sash is in said open position.

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33. (New) An operable window system manufactured by the process comprising: providing a fixed frame;

attaching a moving sash to said fixed frame in such a manner that said moving sash substantially rotates about an axis with respect to said fixed frame from an open position to a closed position; and

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attaching a removable screen directly to said fixed frame using a hook and loop fastener, such that said removable screen is mounted between said fixed frame and said moving sash such that said screen covers a window opening defined by said fixed frame when said moving sash is in said open position.

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EXHIBIT B

## IMPROVED WINDOW SCREEN SYSTEM

Cross-Reference to Related Application

This application relates to and claims priority from my co-pending provisional application Serial No. 60/093,122, filed July 15, 1998.

Field of the Invention

This invention relates to window screens. More particularly, this invention relates to systems for attaching and securing screens to window frames.

Background of the Invention

Traditional window screens involve the use of a rigid frame (typically composed of metal) which extends around the periphery of the screen mesh and secures the screen mesh edges. This screen frame is then spring loaded in grooves in the window frame or mechanically connected or secured to the window frame to hold the screen in place.

The traditional system involves a number of disadvantages and inherent limitations. For example, the installation, removal and storage of conventional window screens frequently results in bent frames or damage to the screen mesh. Also, the required aluminum screen framing elements reduce the visual opening of a window. Further, some types of window frames do not have an appropriate

area to receive the normal metal framed screen or the window may not be rectangular in shape which renders the corner assembly or radius sections of the traditional metal screen frame problematic. Yet another disadvantage is that periodic maintenance may be required of the frame (i. e. painting, etc.).

U.S. Patent No. 4,249,589 describes apparatus for mounting an environment-controlling screen, sheet or membrane. However, separate frame sections are required and they must be secured to the inner periphery of an opening. This arrangement inherently reduces the size of the viewing opening. The system is surface-applied in a location exterior of all vertically operating window elements.

U.S. Patent No. 4,909,004 describes the use of a mesh screen for covering an opening in a structure (e.g. a garage). The screen is secured over the opening with VELCRO attachments, and a rain impervious sheeting is secured over the screen to increase the degree of enclosure of the structure in a selected amount and prevent wind and rain from passing through the screen.

U.S. Patent No. 5,193,602 describes a roll up canvas cover for window frames that utilizes VELCRO pads to secure the canvas covering in a rolled up position or in a fully extended closed position.

U.S. Patent No. 5,323,835 describes a removable screen for a car garage door. The top and sides of the screen are secured to the door casing with a VELCRO fastening system. A vertical zipper in the screen permits access into or out of the garage.

There has not heretofore been described a window screen system having the features and advantages provided by the present invention.

#### Summary of the Invention

In accordance with the present invention there is provided a frameless window screen system in which the screen mesh periphery has secured to it a strip of loop fastener material (i.e. VELCRO brand fastener material) and the corresponding window frame has secured to it a strip of the mating hook material. For example, the periphery of the screen or mesh may have secured to it a strip of the loop fastener material and the corresponding area of the window frame has secured to it a strip of the mating hook fastener material.

In order to affix the screen mesh to the window frame, the strip of fastener material on the outer edge of the mesh is aligned with and placed against the mating fastener strip which has been previously secured to a location on the window frame deemed most advantageous by the window designer. Each edge of the mesh includes a strip of the fastener material and each corresponding side of the window frame includes a strip of the mating fastener. Thus, each edge of the mesh can be stretched and then applied against the window frame, whereby the mesh is rendered taught and held tightly in place on the window frame regardless of its shape.

With the system of this invention, no separate rigid frame is required for the mesh or screen. Thus, the mesh can be easily removed for cleaning, transport or storage. The mesh can be easily rolled or folded and therefore it is much easier to work with than conventional metal framed screens. Also, there is no rigid frame to be potentially damaged (e.g. bent or scratched) or cause injury to the installer or damage to other materials in proximity to it. Maintenance associated with painting traditional metal framed screens is eliminated.

Another advantage of the system of this invention is that the frameless mesh or screen can be easily made for any size or shape of window opening (including non-rectangular openings, round, oval, etc.). It also enables screens to be made

in sizes that are too large for the common metal-framed screen to survive handling. It can also be used on windows which do not include a location for a traditional metal-framed screen.

Another significant advantage of the frameless window screen system is that it can be implemented without reduction of the size of the visual opening of the window. Further, a sagging mesh can be easily stretched taught again by pulling the mesh away from the window frame on one side, stretching it tightly and then reattaching it to the window frame.

Yet another advantage of the system is that the mesh can be more effectively sealed to the window frame at its edges than conventional metal framed screens, thereby preventing insects from entering into the room around the edges. The system of this invention also reduces manufacturer shipping and storage costs for new production windows or replacement screens.

Other advantages and features of the system of this invention will be apparent from the following detailed description and the accompanying drawings.

#### Brief Description of the Drawings



The invention is described in more detail hereinafter with reference to the accompanying drawings where like reference characters refer to the same parts throughout the several views and in which:

FIGURE 1 is an isometric exploded view illustrating a window frame, a screen mesh, and a window sash for either an in-swinging or out-swinging rectangular window.

FIGURE 2 illustrates the use of a screen system of this invention with a window frame having an in-swinging window sash.

FIGURE 3 illustrates the use of a screen system of this invention with a window frame and a common, crank controlled, out-swing window sash.

FIGURE 4 illustrates the use of a screen system of this invention on another type of window frame.

FIGURE 5 illustrates the use of a screen system of this invention in comparison with a common aluminum framed screen in a typical crank controlled out-swing window frame.

Detailed Description of the Invention

As illustrated in the drawings, the system of this invention involves (a) securing a first strip of fastener material to the outer edges of a screen mesh and (b) securing a second strip of mating fastener material to the edges of a corresponding window frame.

In Figure 1, the edges of screen mesh 10 have adhered thereto (e.g. with adhesive or with stitching) continuous strips of fastener material 11. The window frame 13 has adhered thereto a continuous strip of mating fastener material 12. Thus, whenever the window sash 14 is open, each edge of the screen mesh can be stretched and applied to (i.e. simply pushed against) a corresponding edge of the window frame, whereupon the mesh becomes affixed to the window frame.

Figure 2 illustrates a window having fixed frame section 15 and movable in-swinging window sash section 16. A strip 12 of fastener material is secured to the fixed window frame section 15 as shown. The mating strip 11 of fastener material on the edge of the screen mesh can be simply applied to strip 12 to secure it in place without taking up problematic amounts of space with traditional screen frames.

Figure 3 illustrates another type of window in which the system of the invention may also be used. The fastener strip 12 is secured to window frame section 18A which is the crank housing portion of frame section 18. The screen mesh 10 (with strip 11 on its edge) can be stretched into place and mated with strip 12. The window sash section 17 is moved open or closed through traditional action of the crank hardware assembly 30 without interfering with the screen mesh.

Figure 4 illustrates use of the screen mesh system on another type of window frame 20. Strip 12 is secured to window frame component 20 at an appropriate location out of view so as to mate with the strip 11 on the edge of mesh 10 without interfering with the electric motor mechanisms mounted in location 22 that operate the window sash section 21.

Figure 5 illustrates how the system of the invention provides for strip 11 on the screen mesh and strip 12 on the window frame section 18A to be located outside of the window's visual opening compared to that visual opening resulting from a traditional metal frame screen 19, provided for reference purposes only, in its most common usage location.

Other variants are possible without departing from the scope of the present invention. For example, the strip 11 can be placed on each face of mesh, if

desired. This enables the mesh to be reversed on the window frame for any reason. The system of this invention can also be used on various other types of frames besides those shown in the drawings.

Although it is preferred for the strip of fastener along each edge of the mesh to be a continuous strip, it is possible to use several shorter strips along each edge if that was desired. Also, the width of each fastener strip may vary, as desired. The fastener materials used in this invention are conventional hook and loop fasteners (e.g. VELCRO brand fasteners or other similar hook and loop fasteners which are commercially available).

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What is claimed is:

1. A frameless window screen system for use in combination with a conventional window frame, the system comprising:

- (a) a screen mesh having side edges;
- (b) a first fastener strip secured to said edges of said screen mesh;
- (c) a second fastener strip secured to said window frame;

wherein said edges of said screen mesh can be aligned with said window frame in a manner that said first fastener strip mates with said second fastener strip to detachably secure said screen mesh to said window frame; wherein said first and second fastener strips comprise hook and loop fasteners.

2. The system in accordance with claim 1, wherein said screen mesh is rectangular.

3. The system in accordance with claim 1, wherein said screen mesh is non-rectangular.

4. A combination comprising:

- (a) a window frame defining an opening;
- (b) a screen mesh having a size and shape approximately equal to said opening; said mesh having side edges;
- (c) a first fastener strip secured to said side edges of said screen mesh;

(d) a second fastener strip secured directly to said frame around said opening;

wherein said first and second fastener strips comprise hook and loop fasteners; and wherein said side edges of said screen mesh are aligned with said frame around said opening; and wherein said first fastener strip is detachably secured to said second fastener strip, whereby said screen mesh covers said opening.

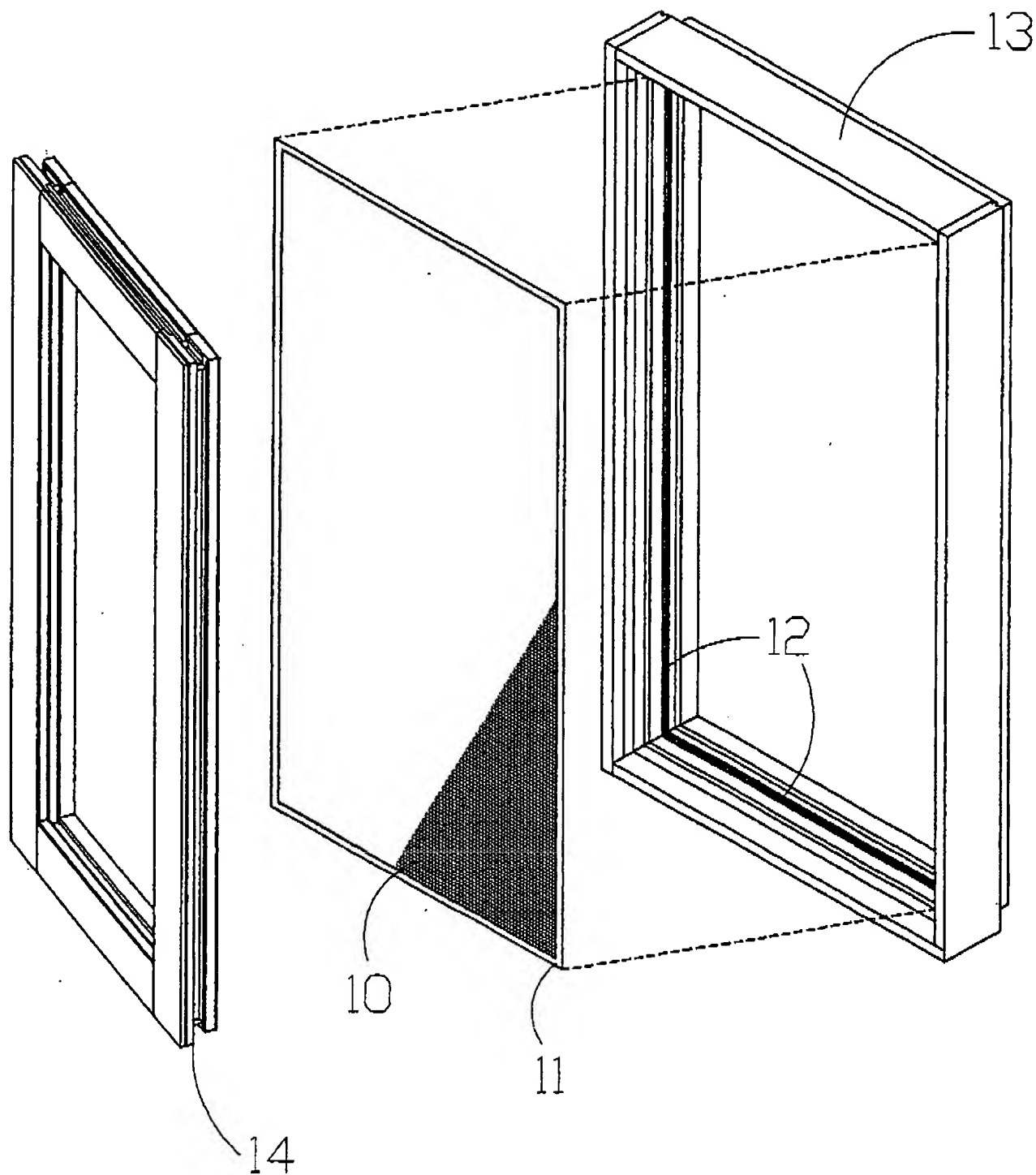


Fig. 1

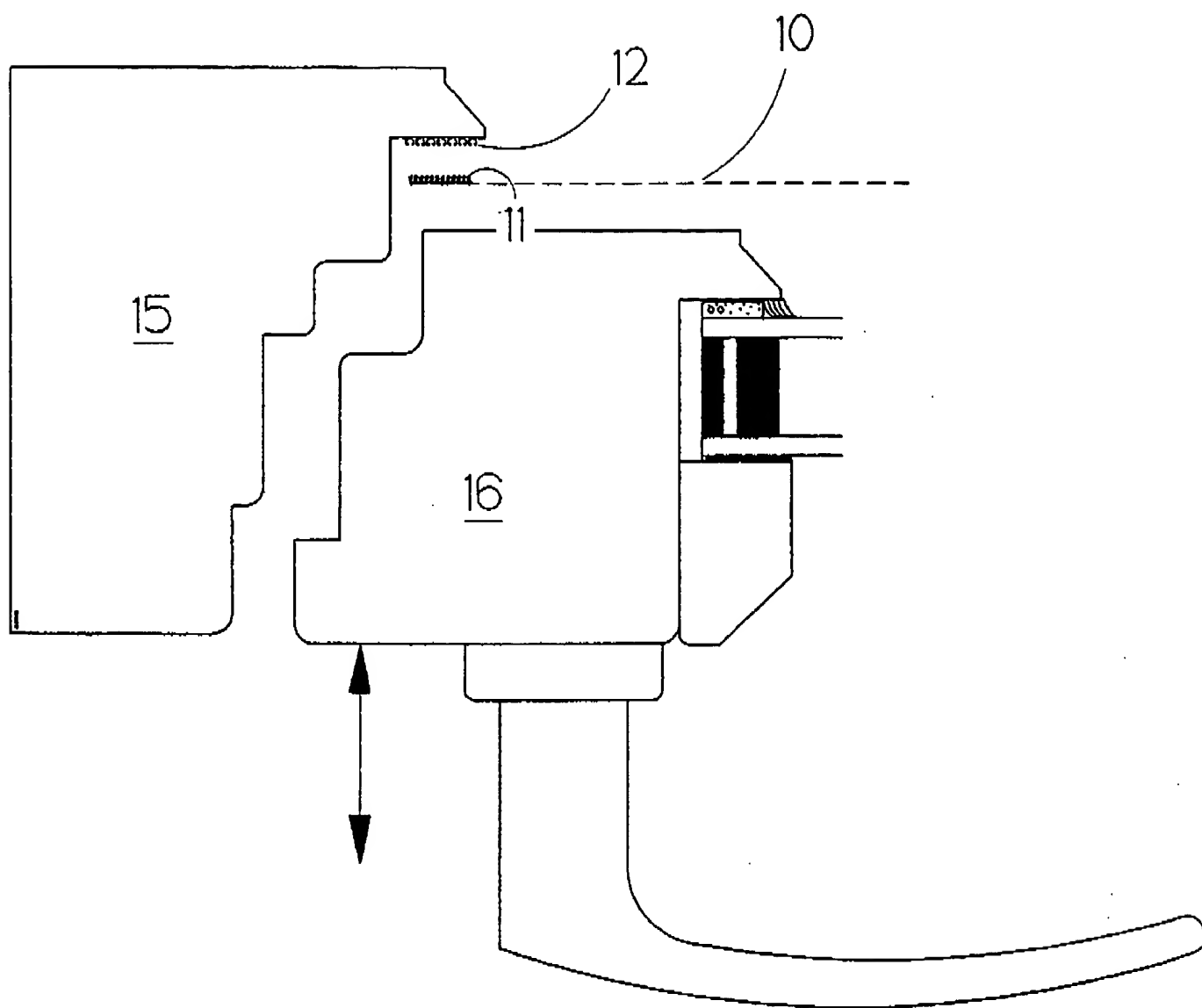


Fig. 2



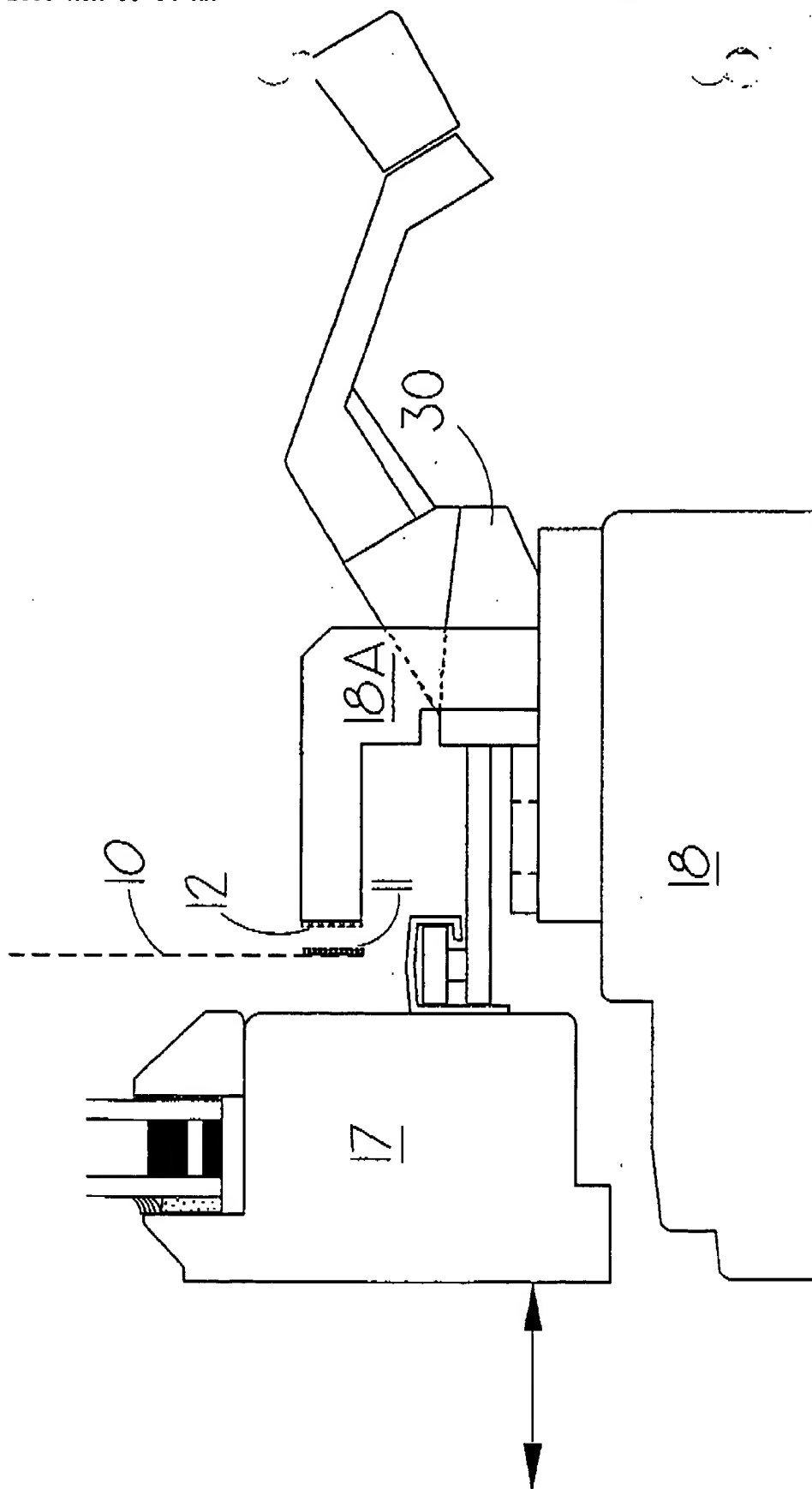


Fig. 3

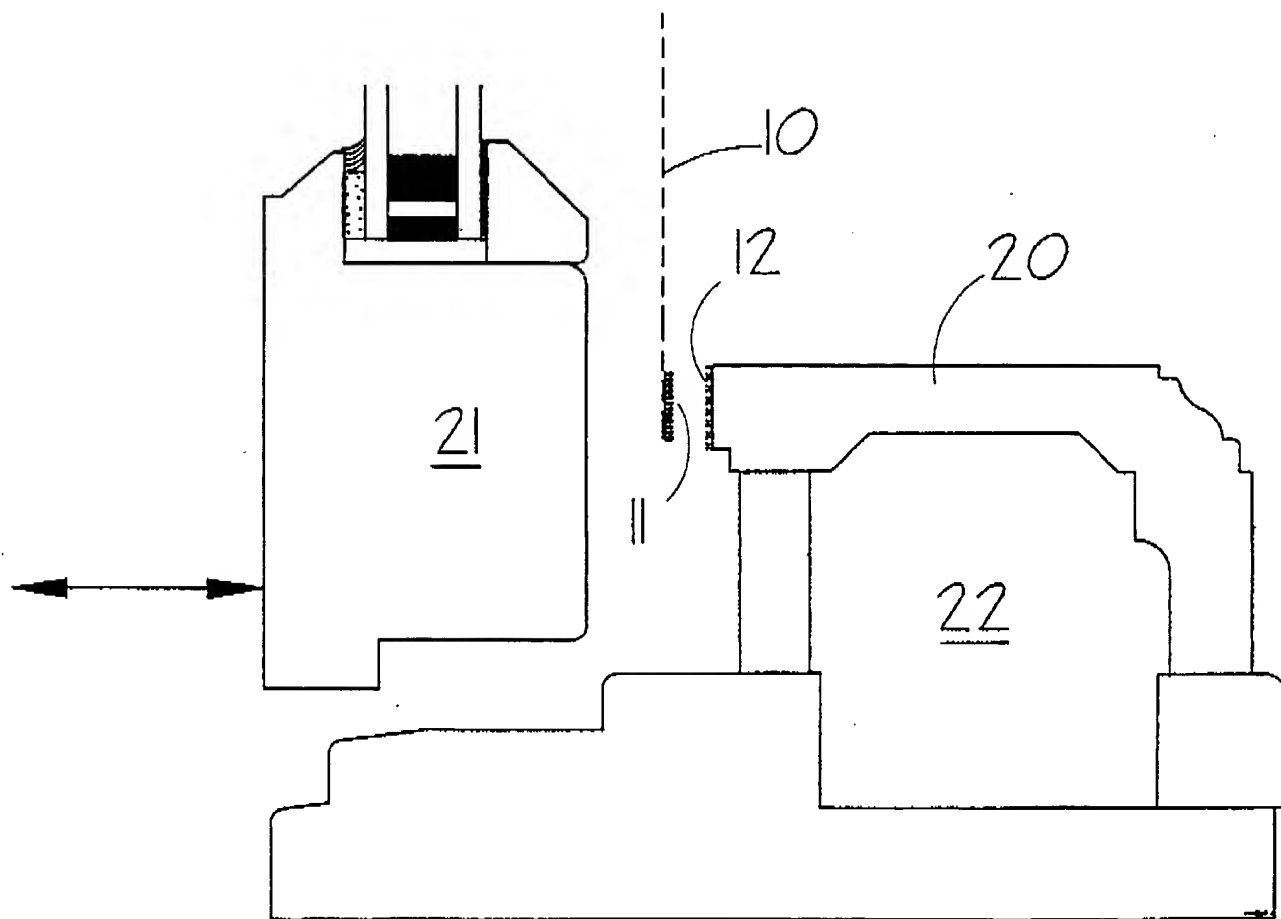


Fig. 4

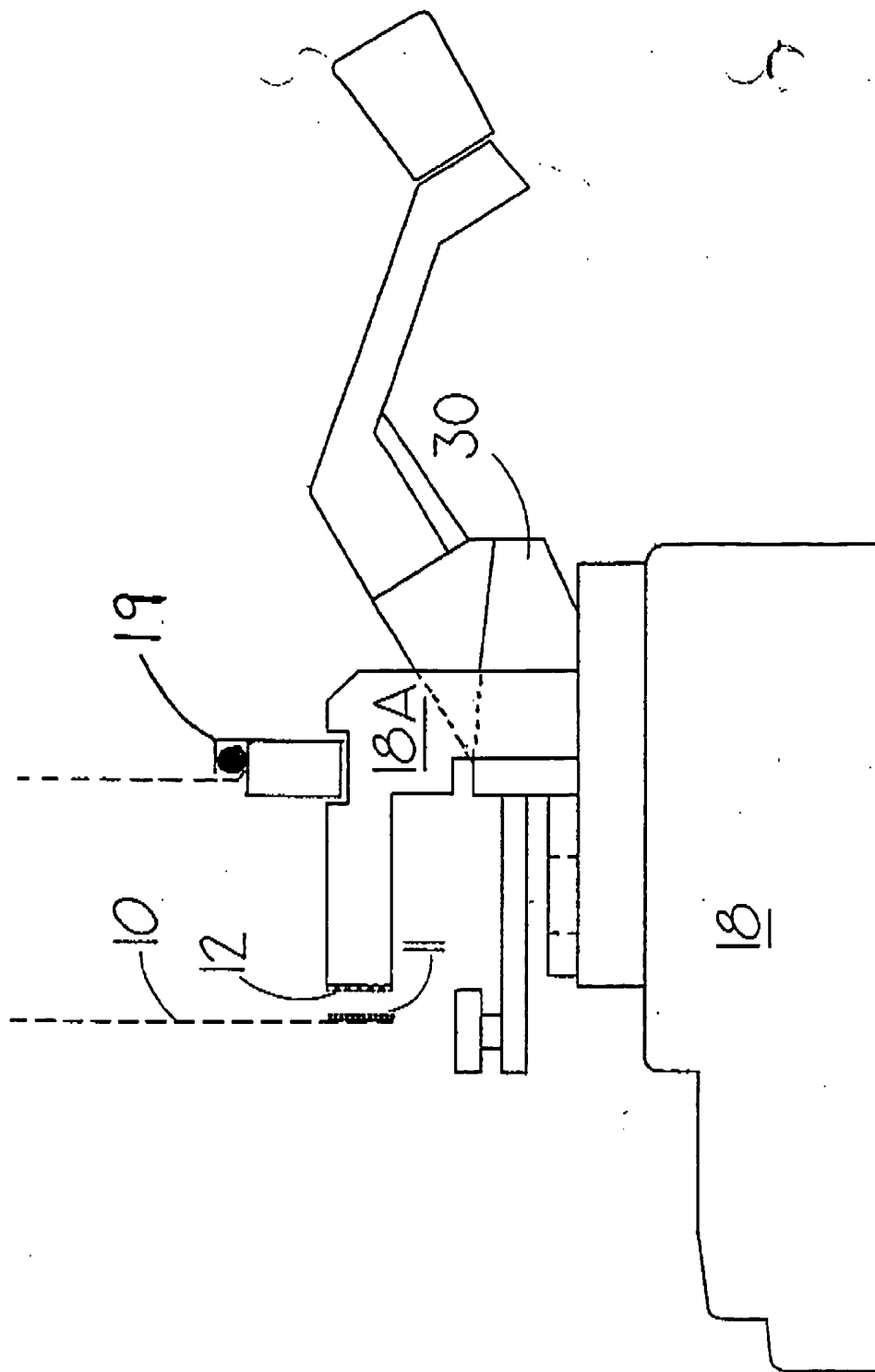


Fig. 5